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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,201	12/20/2001	Kazuhiro Maeno	TIC-0010	9902

7590

09/11/2002

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EXAMINER

CHU, CHRIS C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 09/11/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/019,201

Applicant(s)

MAENO ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

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has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1 ~ 6 are rejected under 35 U.S.C. 102(a)/102(b) as being anticipated by the acknowledged prior art of Figs. 1 and 2.

Regarding claim 1, the acknowledged prior art of Figs. 1 and 2 disclose a semiconductor device, comprising:

- a plurality of semiconductor elements (57) arranged on a substrate (55); and
- a main current electrode (62) which is arranged near said plurality of semiconductor elements and vertically apart from the surface of the substrate, wherein
- each of said plurality of semiconductor elements (57) and said main electrode are electrically connected.

Regarding claim 2, the acknowledged prior art of Figs. 1 and 2 disclose each of said plurality of semiconductor elements (57) and said main current electrode (62) being connected by wire bonding.

Regarding claim 3, since the acknowledged prior art of Figs. 1 and 2 does not limit the plurality of semiconductor elements to be any particular or specific material, hence his/her

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disclosure encompasses all well known semiconductor elements including a "switching elements."

Regarding claim 4, the acknowledged prior art of Figs. 1 and 2 disclose a thermal conductor member (52) at a bottom of the semiconductor device, wherein said plurality of semiconductor elements are directly or indirectly connected to said thermal conductor member so that they are thermally coupled.

Regarding claim 5, since the acknowledged prior art of Figs. 1 and 2 does not limit the thermal conductor member to be any particular or specific material, hence his/her disclosure encompasses all well known thermal conductor member material including a "ceramic material."

Regarding claim 6, the acknowledged prior art of Figs. 1 and 2 disclose said plurality of semiconductor elements (57) being arranged in one row or a plurality of rows.

5. Claims 7 ~ 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Inoue et al.

Regarding claim 7, Inoue et al. discloses in Fig. 15, Fig. 16 and column 9, lines 46 ~ 50 a semiconductor device including one or a plurality of semiconductor elements, comprising:

- a substrate (a structure under semiconductor elements) on which the one or the plurality of semiconductor elements are arranged;
- a case (1501) that is arranged in a predetermined position relative to said substrate so that the one or the plurality of semiconductor elements are surrounded; and
- a metal member (1604) on which a main current electrode of the one or the plurality of semiconductor elements and a terminal for electrically connecting said

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semiconductor device and a circuit external to said semiconductor device are formed integrally,

- wherein said metal member (1604) is arranged in a position apart from said substrate by using said case.

Regarding claim 8, Inoue et al. discloses in Fig. 15 and 16 said metal member (1604) being arranged above the one or the plurality of semiconductor elements or a wiring pattern connected to the one or the plurality of semiconductor elements.

Regarding claim 9, Inoue et al. discloses in column 6, lines 13 ~ 15 said metal member and the semiconductor device being electrically connected by wire bonding.

Regarding claim 10, Inoue et al. discloses in Fig. 15 and 16 said case (1501) including a frame portion surrounding the one or the plurality of semiconductor elements; and said metal member is fixed to the frame portion of said case.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsunoda et al., Hiyoshi, Mangtani, Yamane et al., Rinehart et al. and Polack et al. disclose a semiconductor device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu
Examiner
Art Unit 2815

c.c.
August 16, 2002


GEORGE C. ECKERT II
PATENT EXAMINER